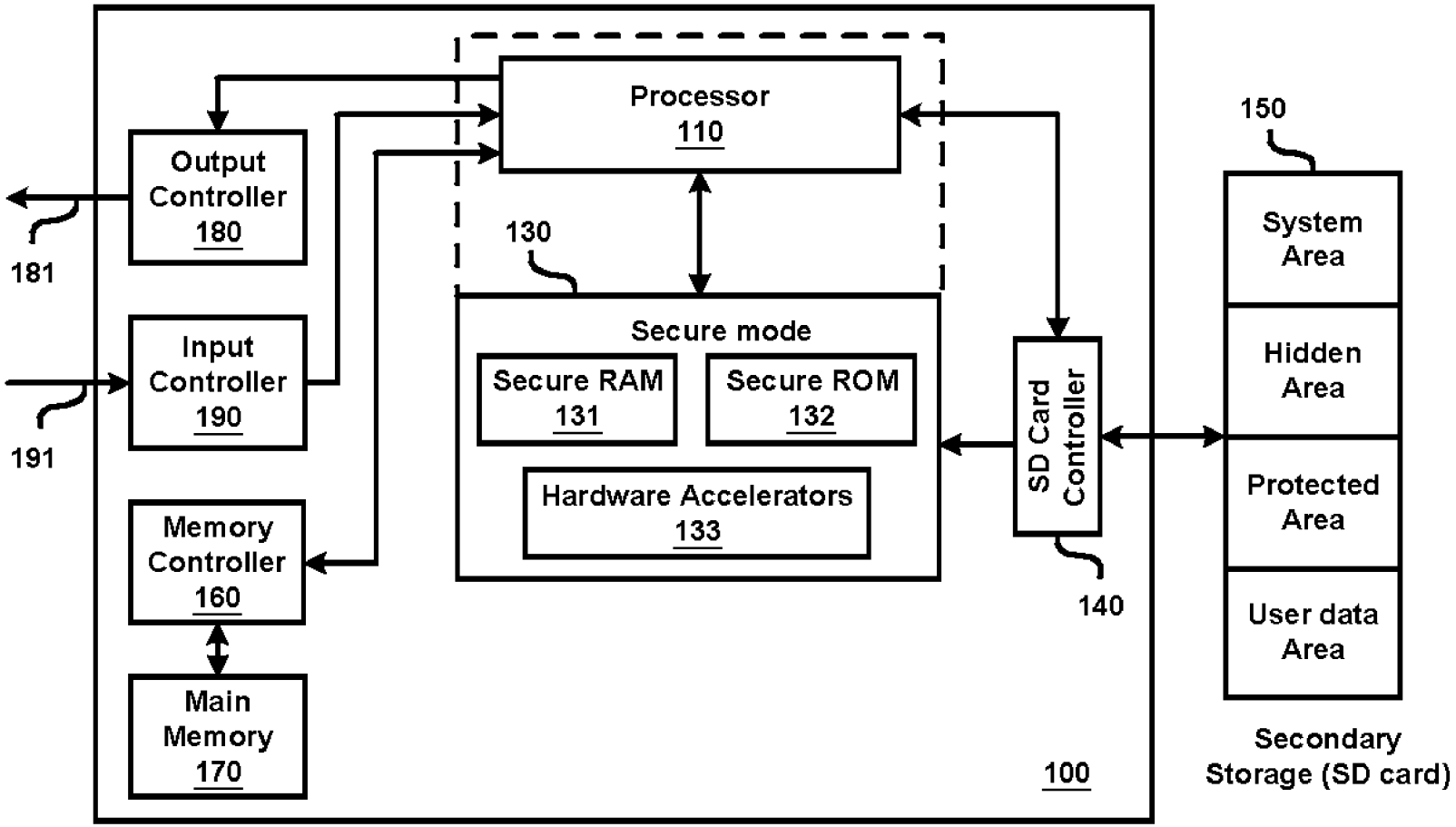

Processor
110
Output
Controller
180
181
Input
Controller
190
191
Memory
Controller
160
Main
Memory
170
130
Secure mode
Secure RAM
131
Secure ROM
132
Hardware Accelerators
133
SD Card
Controller
140
100
150
System
Area
Hidden
Area
Protected
Area
User data
Area
Secondary
Storage (SD card)

FIG. 1

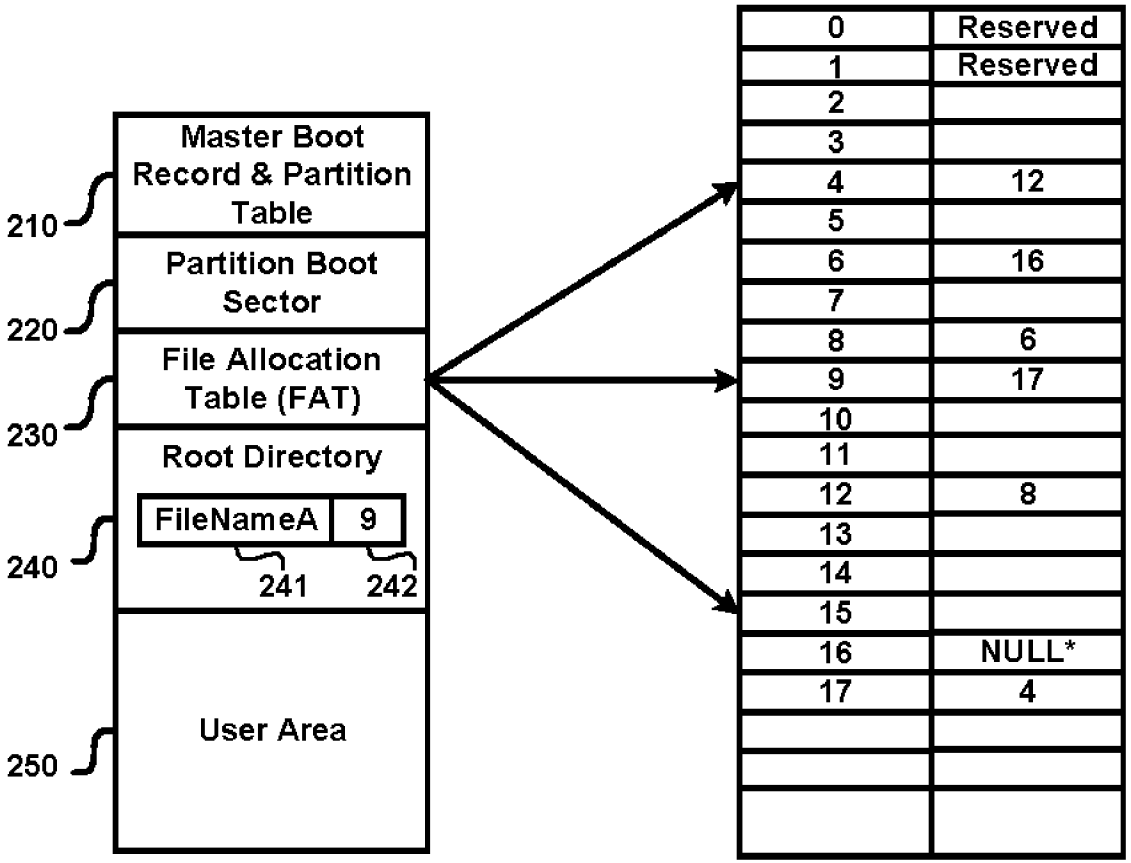
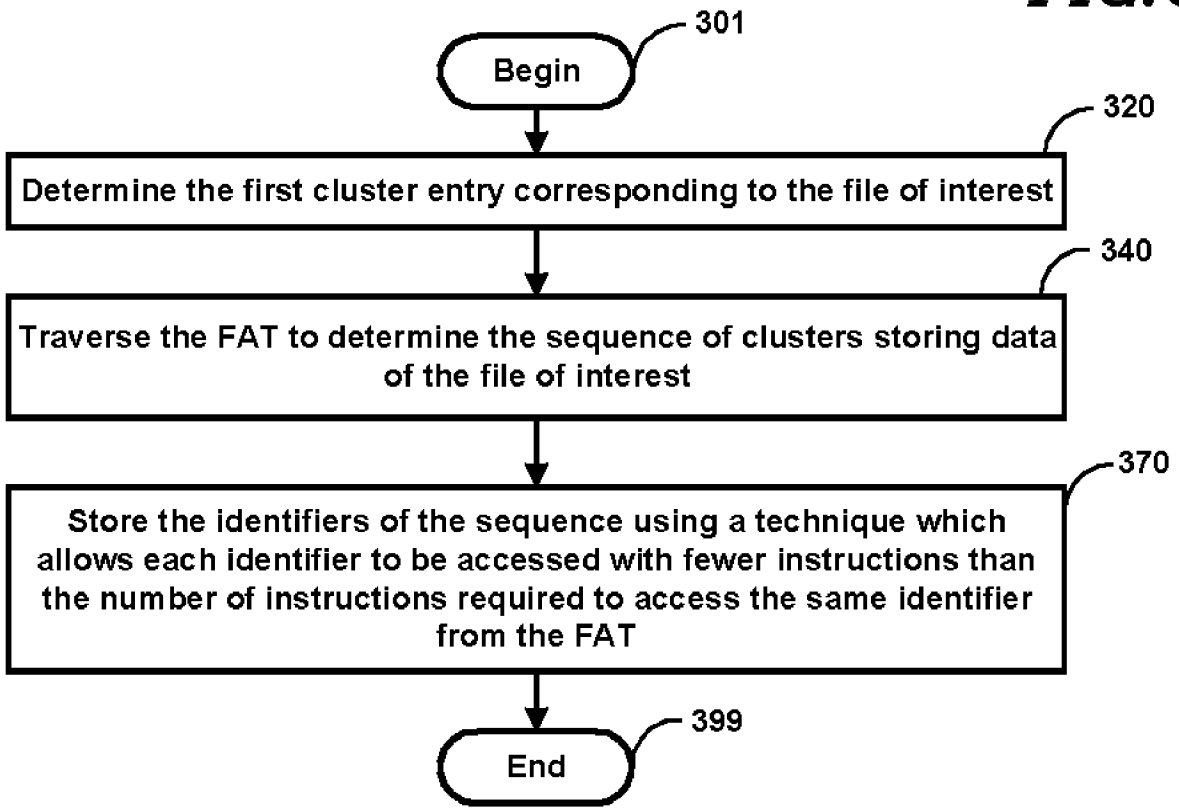
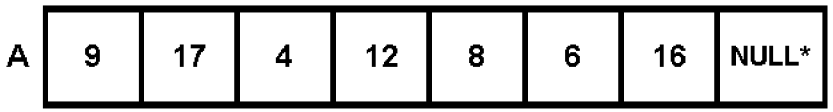


FIG. 2 (Prior Art)

FIG. 3


301
Begin
320
Determine the first cluster entry corresponding to the file of interest
340
Traverse the FAT to determine the sequence of clusters storing data of the file of interest
370
Store the identifiers of the sequence using a technique which allows each identifier to be accessed with fewer instructions than the number of instructions required to access the same identifier from the FAT
399
End



A [0] = 9
A [1] = 17
A [2] = 4
A [3] = 12
A [4] = 8
A [5] = 6
A [6] = 16

FIG. 4

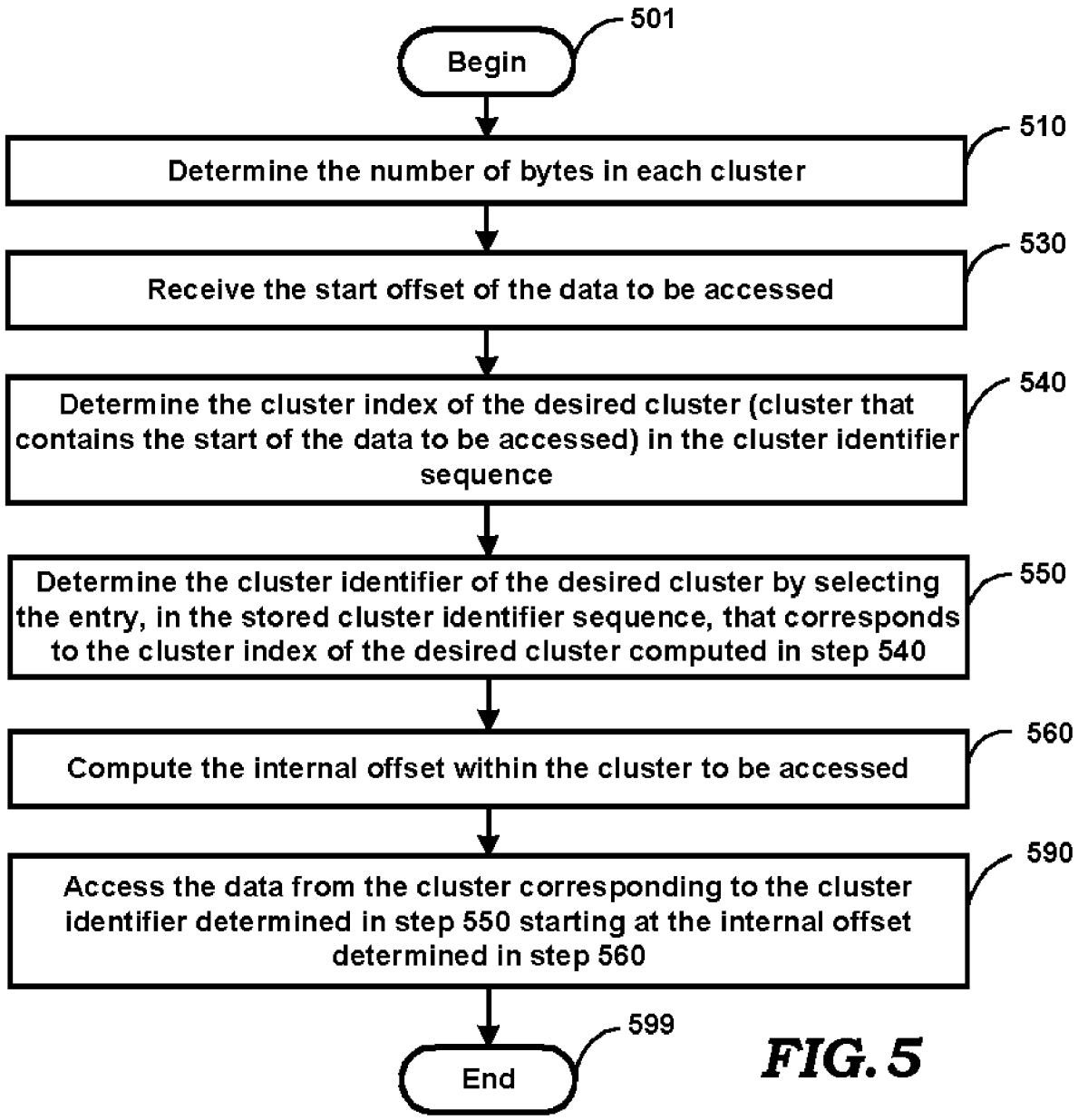

501
Begin
510
Determine the number of bytes in each cluster
530
Receive the start offset of the data to be accessed
540
Determine the cluster index of the desired cluster (cluster that contains the start of the data to be accessed) in the cluster identifier sequence
550
Determine the cluster identifier of the desired cluster by selecting the entry, in the stored cluster identifier sequence, that corresponds to the cluster index of the desired cluster computed in step 540
560
Compute the internal offset within the cluster to be accessed
590
Access the data from the cluster corresponding to the cluster identifier determined in step 550 starting at the internal offset determined in step 560
599
End

FIG. 5

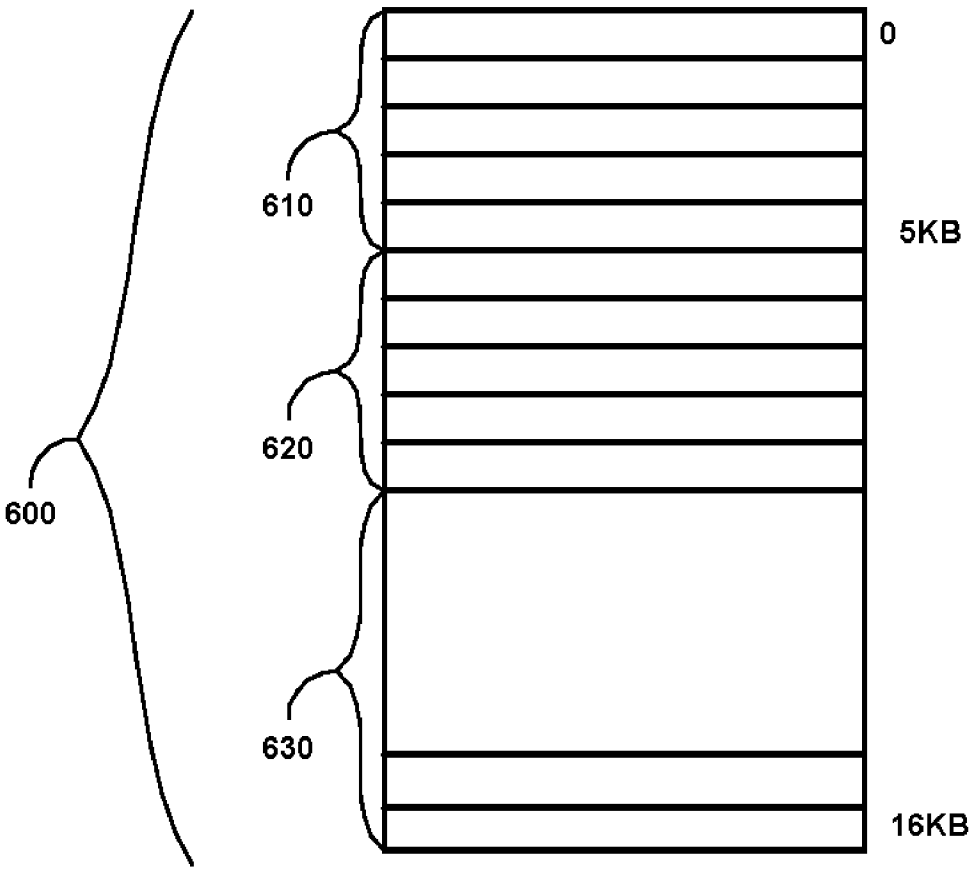


FIG. 6

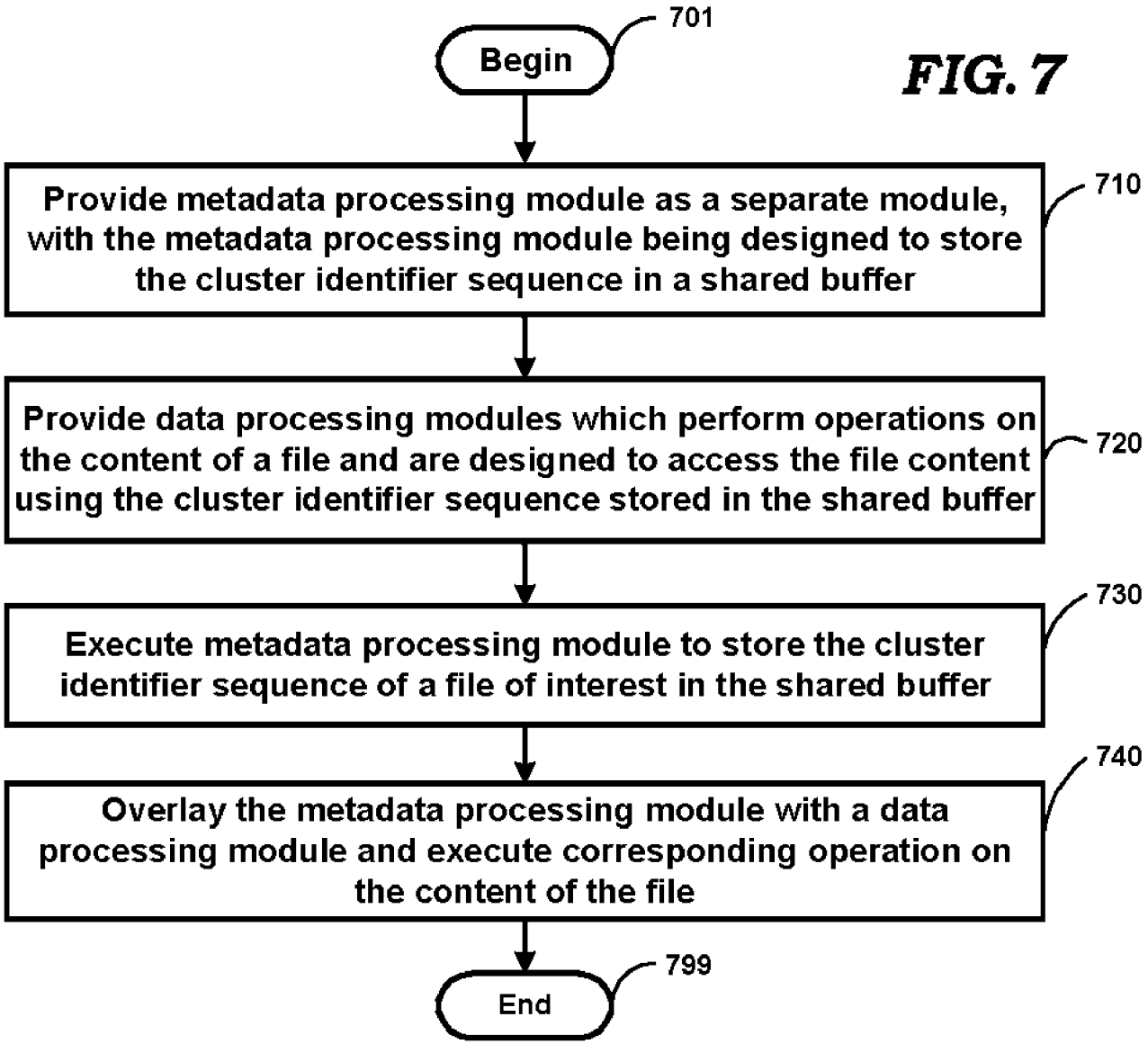

Begin
701
Provide metadata processing module as a separate module, with the metadata processing module being designed to store the cluster identifier sequence in a shared buffer
710
Provide data processing modules which perform operations on the content of a file and are designed to access the file content using the cluster identifier sequence stored in the shared buffer
720
Execute metadata processing module to store the cluster identifier sequence of a file of interest in the shared buffer
730
Overlay the metadata processing module with a data processing module and execute corresponding operation on the content of the file
740
End
799

FIG. 7